

Please replace the paragraph beginning on page 142, line 6 with the following amended paragraph:

ABSTRACT

~~A method for ion planting a species into a surface layer of a workpiece in a chamber, the method includes placing the workpiece in a processing zone of the chamber bounded by a chamber side wall and a chamber ceiling facing said workpiece and between a pair of ports of the chamber near generally opposite sides to the processing zone and connected together by a conduit external of the chamber. The method further includes introducing into the chamber a process gas comprising the species to be implanted, and further generating from the process gas a plasma current and causing the plasma current to oscillate in a circulatory reentrant path comprising the conduit and the processing zone.~~

A plasma immersion ion implantation reactor for ion implanting a species into a surface layer of a workpiece includes an enclosure which has a side wall and a ceiling defining a chamber and a workpiece support pedestal within the chamber having a workpiece support surface facing the ceiling and defining a process region extending generally across the wafer support pedestal and confined laterally by the side wall and axially between the workpiece support pedestal and the ceiling. The enclosure has at least a first pair of openings at generally opposite sides of the process region and a first hollow conduit outside of the chamber having first and second ends connected to respective ones of the first pair of openings, so as to provide a first reentrant path extending through the conduit and across said process region. A gas distribution apparatus is provided on or near an interior surface of the reactor for introducing a process gas containing the species to be ion implanted and a

first RF plasma source power applicator for generating a plasma
in the chamber.